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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: WAGNER, INGO W.
Application No.: 10/591257 Confirmation No.: 9293
Filed: March 1, 2005 Group Art Unit 1797
Title: APPARATUS AND METHOD FOR GENERATING A MULTI-COMPONENT
COMPOUND

BRIEF ON APPEAL

Mail Stop: Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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March 8, 2010	/Tracey L. Riley/
Date	Signed by: Tracey L. Riley

Dear Sir:

This is an appeal from the Office Action mailed on November 23, 2009, finally rejecting pending claims 1 through 16.

Fees

- ☒ Any required fee under 37 CFR § 41.20(b)(2) will be made at the time of submission via EFS-Web. In the event fees are not or cannot be paid at the time of EFS-Web submission, please charge any fees under 37 CFR § 1.17 which may be required to Deposit Account No. 13-3723.
- ☒ Please charge any additional fees associated with the prosecution of this application to Deposit Account No. 13-3723. This authorization includes the fee for any necessary extension of time under 37 CFR § 1.136(a). To the extent any such extension should become necessary, it is hereby requested.
- ☒ Please credit any overpayment to the same deposit account.

A Notice of Appeal in this application was transmitted to the United States Patent and Trademark Office via the electronic filing system on January 11, 2010, and was received in the USPTO on January 11, 2010.

Appellants request the opportunity for a personal appearance before the Board of Appeals to argue the issues of this appeal. The fee for the personal appearance will be timely paid upon receipt of the Examiner's Answer.

REAL PARTY IN INTEREST

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

STATUS OF CLAIMS

Claims 1 through 16 are pending and stand rejected, and that rejection is the subject of this appeal. Claim 17 has been canceled.

STATUS OF AMENDMENTS

No amendments have been filed after the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The claims at issue concern an apparatus for generating a multi-component compound, in particular for dental purposes, comprising at least two cartridges (see Fig. 1, showing one cartridge at 3). Specification at p. 9, lines 7-8. Each cartridge is adapted for containing a component (Fig. 1 at 4) of the multi-component compound (specification at p. 9, lines 11-12) and having a plunger (specification at p. 9, lines 9, 13-14, and 18, and Fig. 1 at 2) adapted for pressing out its component (4) from the cartridge (3). The apparatus includes a driving device (specification at p. 9, lines 8-10) for the plungers in which the drive speed is adjustable (specification at p. 7, lines 6-8). The driving device comprises a stepping motor (specification at p. 5, lines 12-15, and Fig. 1 at 1). The driving device also includes a detector (specification at p. 6, lines 12-17, and amended Fig. 1 at 11) associated with the stepping motor for detecting at least one of the steps of the stepping motor and the load on the stepping motor. Other claims relate to a method for generating a multi-component compound using an apparatus of the type described above. See specification at p. 4, line 30 through p. 5, line 11, and p. 5, line 19 through p. 6, line 2.

The references to the specification and drawing are exemplary, not exhaustive.

First Ground of Rejection

Claims 1, 4, 5, 7 through 9, 11, 13, and 16 stand rejected under 35 U.S.C. 102(b) as purportedly anticipated by U.S. Patent No. 5,853,774 (Dreve).

Second Ground of Rejection

Claims 1 through 16 stand rejected under 35 U.S.C. 103(a) as purportedly unpatentable over U.S. Patent No. 6,315,164 (Muhlbauer et al.) in view of Dreve.

ARGUMENT

First Ground of Rejection

Claims 1, 4, 5, 7 through 9, 11, 13, and 16 stand rejected under 35 U.S.C. 102(b) as purportedly anticipated by U.S. Patent No. 5,853,774 (Dreve). The Examiner indicated that Dreve discloses an apparatus for generating a multi-component compound, in particular for dental purposes, comprising the elements listed in the claims. For simplicity, the correlation between the claim elements and the structures or functions identified by the Examiner in Dreve will not be repeated herein. Applicants respectfully disagree for at least the following reasons, and request reconsideration and reversal of the rejection.

The pending claims are patentable over Dreve because Dreve does not disclose or suggest a stepping motor. In the passages in Dreve identified in the Office Action, Dreve says only that the speed of a (regular) motor may be "stepped," for example at column 2, lines 24 through 27. (In fact the priority application upon which the U.S. Dreve reference is based - DE 29617872.1 - at the corresponding place in the description discloses "Der elektromotorische Antrieb kann gegebenenfalls mit stufenweise oder auch stufenlos vorwählbaren Geschwindigkeitsstufen ausgestattet sein." which according to the U.K. family member (GB 2318394) translates approximately as "The electric motor drive can optionally be equipped with speed steps which can be preselected stepwise or even infinitely.") In other words, this is believed to disclose no more than a variable-speed motor, of the type used for example in a

variable-speed drill. This is consistent with the remainder of Dreve, which appears to disclose only a standard DC electric motor with certain speed control circuitry. However, “stepping” the speed of an electric motor up or down does not make that motor a “stepping motor” within the meaning of the present invention. In a true stepping motor (or “stepper motor”), as the speed of the motor increases, the torque decreases, and vice versa. Dreve does not disclose any relationship between the variable speed of its motor and the torque provided by the motor, nor any motor structure or function that correlates speed and torque, and thus it does not disclose or suggest a stepping motor as set forth in the pending claims. Accordingly, reversal of the rejection of claims 1, 4, 5, 7 through 9, 11, 13, and 16 under 35 U.S.C. 102(b) over Dreve is respectfully requested.

Furthermore, Dreve was said in the Office Action to disclose a detector associated with the stepping motor for detecting the load on the stepping motor. Applicants also respectfully disagree with that assertion, because Dreve discloses no more than a position sensor used to detect the position of a piston at the end of its operational range, not a load sensor. See Dreve at col. 2, lines 29-30. This is an independent basis for the patentability of claims 1, 4, 5, 7 through 9, 11, 13, and 16 – that Dreve does not disclose or suggest a detector for detecting the load on the stepping motor – and reversal of the rejection of claims 1, 4, 5, 7 through 9, 11, 13, and 16 under 35 U.S.C. 102(b) over Dreve is respectfully requested for this reason as well.

Second Ground of Rejection

Claims 1 through 16 stand rejected under 35 U.S.C. 103(a) as purportedly unpatentable over U.S. Patent No. 6,315,164 (Muhlbauer et al.) in view of Dreve. The Examiner noted that Muhlbauer et al. discloses certain elements of claim 1, for example, but that it fails to disclose “the status of load by the step frequency of the stepping motor.” Office Action at page 6. The Examiner went on to indicate that Dreve discloses a device said to include a stepping motor, and that claim 1 was therefore obvious in view of the two references. Similar arguments were presented in support of the finding that the remaining claims were unpatentable over Muhlbauer et al. in view of Dreve.

The Office Action apparently concedes that Muhlbauer et al. does not disclose a stepping motor within the meaning of claims 1 through 16, but relies on Dreve for that element. Dreve, as described above, discloses only “stepping” – varying – the speed of a standard electric motor, not providing a stepping motor as that term is used with respect to the present invention. Accordingly the combination of the two references also lacks any disclosure or suggestion of a stepping motor, and without that element the claims cannot be said to be obvious in view of Muhlbauer et al. in view of Dreve. Reversal of the rejection of claims 1 through 16 under 35 U.S.C. 103 over Muhlbauer et al. in view of Dreve is respectfully requested for at least that reason.

Furthermore, the absence in Dreve of a detector for detecting the load on the stepping motor, as described in the preceding section and incorporated by reference herein, is also applicable to at least claims 1 through 12 and 16, and Muhlbauer et al. is not said to remedy this deficiency. Reversal of the rejection of claims 1 through 16 under 35 U.S.C. 103(a) over Muhlbauer et al. in view of Dreve on this basis is also requested.

Finally, a person of ordinary skill in the art would not have combined Muhlbauer et al. and Dreve in the manner suggested because of their incompatible teachings. Muhlbauer et al. is believed to seek a constant advance speed of the plungers (see col. 2, line 5 and line 22; col. 4, line 52 and 63-64, and col. 5, line 31), whereas Dreve discloses a variable speed control for the electric motor, as discussed above. Accordingly the combination of the two references in the manner suggested would not have been obvious to a person of ordinary skill in the art, and therefore the combination rejection is improperly made, and should be reversed.

CONCLUSION

For the foregoing reasons, Appellants respectfully request that the Board reverse the Examiner on all counts.

Respectfully submitted,

March 8, 2010

Date

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Document No. 864430
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Facsimile No.: 651-736-3833

CLAIMS APPENDIX

1. (Original) An apparatus for generating a multi-component compound, in particular for dental purposes, comprising:
 - at least two cartridges (3), each cartridge (3) adapted for containing a component (4) of the multi-component compound and having a plunger (2) adapted for pressing out its component (4) from the cartridge (3); and
 - a driving device for said plungers (2) in which the driving speed is adjustable, wherein the driving device comprises a stepping motor (1), and a detector associated with the stepping motor for detecting at least one of
 - a) the steps of the stepping motor and
 - b) the load on the stepping motor.
2. (Original) An apparatus according to claim 1, wherein the detector detects the status of load by the step frequency of the stepping motor (1).
3. (Previously Presented) An apparatus according to claim 1, wherein the detector detects the increase of load by a change or loss of driving steps of the stepping motor (1).
4. (Previously Presented) An apparatus according to claim 1, wherein the driving device is adapted to drive the stepping motor (1) at a predetermined constant speed.
5. (Previously Presented) An apparatus according to claim 1, wherein the driving device is adapted to drive the stepping motor (1) at different predetermined essentially constant speeds for one or different components and compounds.
6. (Previously Presented) An apparatus according to claim 1, wherein a predetermined speed of the stepping motor (1) is essentially constant when the stepping motor (1) is under load and at a higher speed in the absence of load.

7. (Previously Presented) An apparatus according to claim 1, wherein the stepping motor (1) is able to drive the plungers (2) at low speed with high torque and at higher speeds.
8. (Previously Presented) An apparatus according to claim 1, wherein an output shaft (7) of the stepping motor (1) is connected directly, or via a belt, or via wheels and/or gear wheels and/or toothed chains and/or toothed belts, to each device (8) for moving the plunger (2).
9. (Previously Presented) An apparatus according to claim 1, wherein the driving device is adapted to monitor the position of the plungers (2).
10. (Previously Presented) An apparatus according to claim 1, wherein the driving device is adapted to monitor the position of the plungers (2) by monitoring the driving steps of the stepping motor (1).
11. (Previously Presented) An apparatus according to claim 1, wherein the driving device is adapted to detect and monitor an empty position of a plunger (2) when said respective cartridge (3) is empty.
12. (Previously Presented) An apparatus according to claim 1, wherein the driving device is adapted to detect when the plungers (2) contact the components (4) after inserting the cartridges (3).
13. (Previously Presented) A method for generating a multi-component compound, in particular for dental purposes, by pressing out and mixing its components (4) from at least two cartridges (3) by driving plungers (2) inside the cartridges (3) by means of a driving device in which the driving speed is adjustable, wherein a stepping motor (1) for driving the plungers (2) is provided.
14. (Original) A method according to claim 13, comprising the steps that:
 - the plungers (2) are advanced with high speed into an initial position in which they get in contact with the components (4);
 - the plungers (2) are retracted with high speed for a predetermined relief distance;

- the plungers (2) are advanced with high speed either for a predetermined bias distance greater than the relief distance, or until the components (4) begin flowing out of the cartridges (3) or into the mixer (6);
- the plungers (2) are driven with low speed for pressing out the components (4) from the cartridges (3).

15. (Previously Presented) A method according to claim 14, comprising the steps that:

- during driving the plungers (2) with low speed for pressing out the components (4) from the cartridges (3), the pressing force or load of the stepping motor (1) is monitored and compared with a predetermined upper limit;
- if the upper limit is reached or exceeded, the stepping motor (1) is stopped or adjusted to a lower speed.

16. (Previously Presented) A system for generating a multi-component compound, in particular for dental purposes, with an apparatus according to claim 1 further comprising a mixer (6).

17. (Canceled).

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.